NOvA Experiment Status

Steve Magill ANL

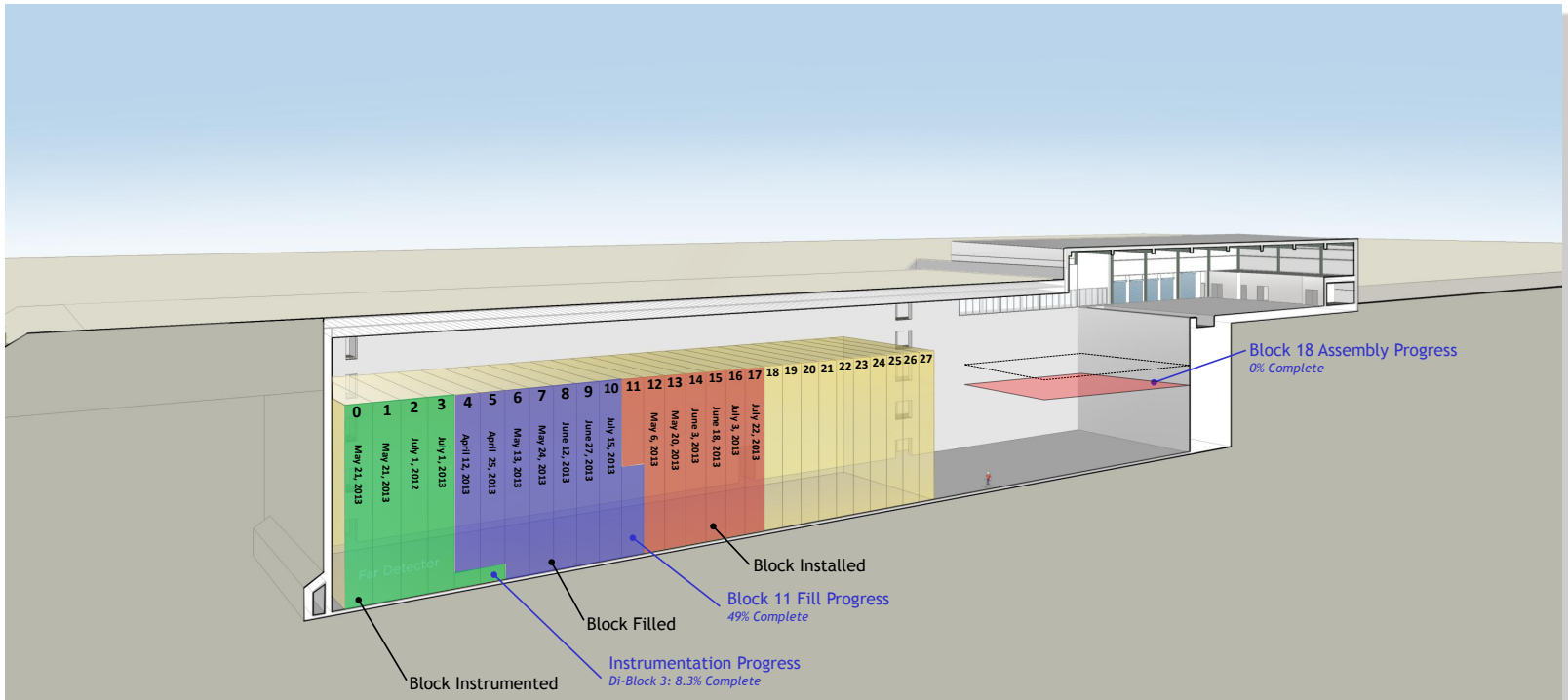
All Experimenter's Meeting, July 22, 2013

Far Detector Progress

The Intensity Frontier

NOvA Far Detector Assembly Progress

Status Date: 22JUL13



14 kilotons = 28 NOvA Blocks

18 blocks of PVC modules are assembled and installed in place

11.49 blocks are filled with liquid scintillator

4.17 blocks are outfitted with electronics

Far Detector Outfitting

Di-Block Status (7/22/13)

Electronics

DiBlock Electronics Status

Position	DiBlock 14	13	12	11	10	9	8	7	6	5	4	3	2	1	
1							DCM Avail	DCM Avail	Filling	FEB Avail	FEB Avail	FEB Avail	APD Avail	APD Avail	Vertical
2							DCM Avail	DCM Avail	Filling	FEB Avail	FEB Avail	FEB Avail	APD Avail	APD Avail	
3							DCM Avail	DCM Avail	Filling	FEB Avail	FEB Avail	FEB Avail	APD Avail	APD Avail	
4							DCM Avail	DCM Avail	Filling	FEB Avail	FEB Avail	FEB Avail	APD Avail	APD Avail	
5							DCM Avail	DCM Avail	Filling	FEB Avail	FEB Avail	FEB Avail	APD Avail	APD Avail	
6							DCM Avail	DCM Avail	Filling	FEB Avail	FEB Avail	FEB Avail	APD Avail	APD Avail	
7			Installation	DCM Avail	DCM Avail	DCM Avail	DCM Avail	DCM Avail	Filling	FEB Avail	FEB Avail	APD Avail	APD Avail	APD Avail	
8			Installation	DCM Avail	DCM Avail	DCM Avail	DCM Avail	DCM Avail	Filling	FEB Avail	FEB Avail	FEB Avail	APD Avail	APD Avail	
9			Installation	DCM Avail	DCM Avail	DCM Avail	DCM Avail	DCM Avail	Filling	FEB Avail	FEB Avail	FEB Avail	APD Avail	APD Avail	
10			Installation	DCM Avail	DCM Avail	DCM Avail	DCM Avail	DCM Avail	Filling	FEB Avail	FEB Avail	FEB Avail	APD Avail	APD Avail	
11			Installation	DCM Avail	DCM Avail	DCM Avail	DCM Avail	DCM Avail	Filling	FEB Avail	FEB Avail	FEB Avail	APD Avail	APD Avail	
12			Installation	DCM Avail	DCM Avail	DCM Avail	DCM Avail	DCM Avail	Filling	FEB Avail	FEB Avail	FEB Avail	APD Avail	APD Avail	Horizontal

Filling block 11 (12th block) horizontals. Begin Filling Vertical modules today. Block set today.

Tuesday 7/23: Begin outfitting top of di-block 09

Filling

Block 11

Vertical Modules

Position	31	29	27	25	23	21	19	17	15	13	11	9	7	5	3	1
0	Monday day 7/29/13		Friday day 7/26/13		Thursday eve 7/25/13		Thursday day 7/25/13		Wednesday eve 7/24/13		Wednesday day 7/24/13		Tuesday eve 7/23/13		Tuesday day 7/23/13	Monday day 7/22/13
1																
2																
3																
4																
5																
6																
7																
8																
9																
10																
11																

Horizontal Modules

	Position	30	28	26	24	22	20	18	16	14	12	10	8	6	4	2	0
Monday eve 7/29/13	11	244	42	247	183	230	193	209		241		176		246	203	249	96
	10	241	239	249	245	241	237	242	230	235	244	221	245	236	243	247	236
	9	243	243	241	242	241	245	246	243	242	247	241	242	246	246	243	242
	8	248	244	244	247	246	248	245	241	241	242	246	246	243	247	244	247
	7	244	246	245	244	249	245	245	238	247	243	243	245	239	245	248	246
	6	242	246	247	226	246	247	244	242	248	334	243	320	240	247	243	244
	5	250	240	250	242	250	241	250	239	248	245	245	166	248	233	252	244
	4	244	248	248	244	245	245	247	245	245	245	245	245	245	246	246	245
	3	246	246	246	247	244	247	245	245	246	245	244	247	242	248	248	246
	2	245	246	246	243	248	244	241	245	243	246	246	242	250	249	251	244
Tuesday day 7/30/13	1	246	180	236	246	245	249	237	246	248	250	152	224	250	242	252	234
	0	247	243	240	240	242	247	248	248	246	243	240	209	247	239	246	244

Block 10

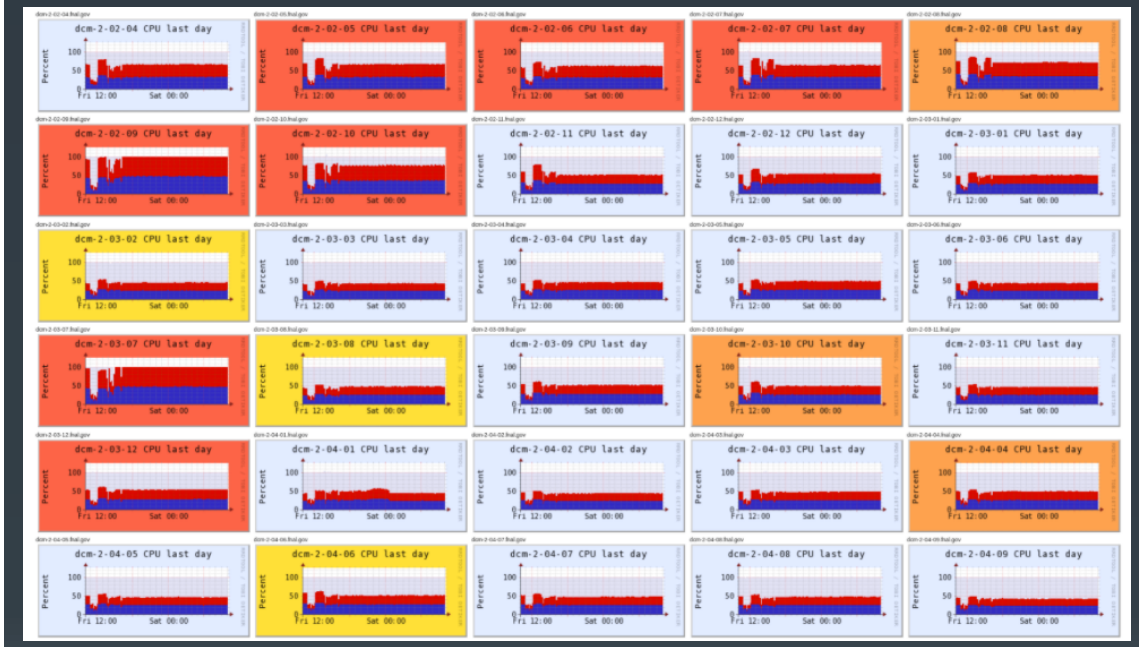
Vertical Modules

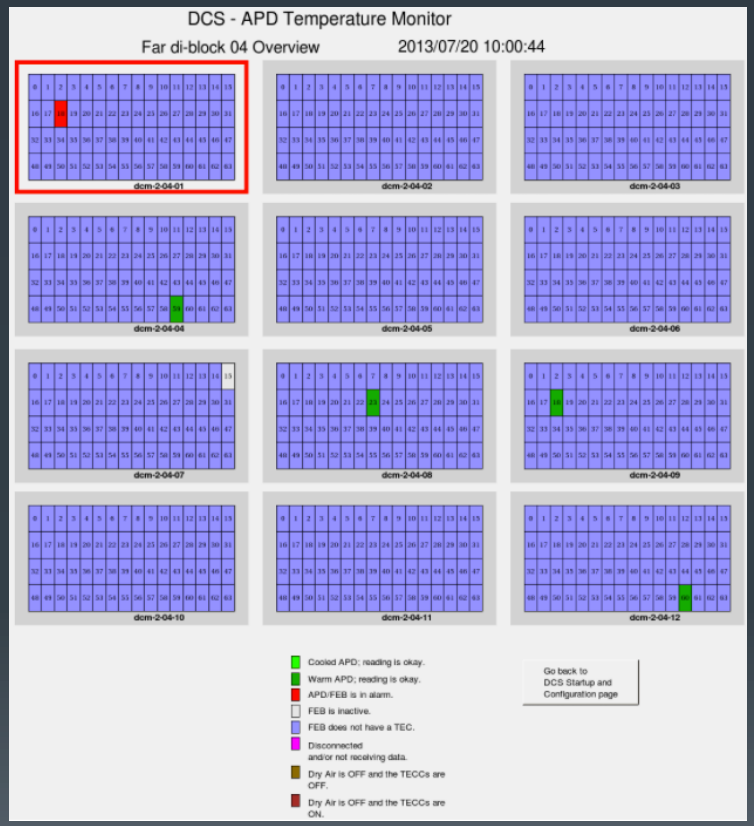
Position	31	29	27	25	23	21	19	17	15	13	11	9	7	5	3	1
0	248	249	248	248	248	249	248	249	249	249	250	250	249	250	250	251
1	248	250	249	249	248	249	249	248	250	249	248	250	248	250	243	249
2	249	248	250	250	249	248	249	250	252	252	252	252	249	251	252	250
3	251	250	249	251	249	250	248	252	251	251	252	252	250	250	250	249
4	251	250	248	252	249	251	250	249	251	253	253	251	248	251	251	250
5	251	249	250	249	249	252	250	251	249	252	251	253	250	253	254	250
6	251	251	249	250	250	250	252	252	250	253	251	252	249	251	251	251
7	249	249	250	253	249	251	249	251	253	250	253	253	250	250	253	250
8	249	249	252	247	250	250	252	251	252	248	252	252	249	251	250	250
9	252	249	250	250	249	229	246	238	252	251	249	254	250	250	252	251
10	251	251	249	250	251	249	251	252	249	252	252	252	252	250	252	249
11	251	251	249	254	250	248	251	249	252	251	252	252	250	250	252	236

Horizontal Modules

	Position	30	28	26	24	22	20	18	16	14	12	10	8	6	4	2	0
Monday eve 7/15/13	11	245	245	246	248	246	247	247	249	248	250	246	249	242	250	247	241
	10	249	245	248	244	249	245	247	243	248	250	248	248	249	250	243	241
	9	246	246	248	240	250	236	248	242	249	247	246	248	249	250	243	240
	8	249	248	249	246	247	247	249	248	246	247	248	247	247	247	247	248
	7	248	244	250	246	247	245	246	246	247	246	247	248	248	245	246	240
	6	248	248	249	249	248	249	247	248	248	249	250	250	249	247	246	248
	5	246	250	246	247	249	250	247	247	248	246	248	248	249	246	248	248
	4	249	248	249	247	248	247	248	247	250	249	249	248	249	247	240	244
	3	202	249	225	248	211	248	214	248	207	249	170	249	221	249	170	247
	2	235	246	246	243	248	245	245	246	246	245	247	249	244	248	247	244
Tuesday day 7/16/13	1	244	222	246	243	244	243	245	245	243	237	245	244	248	247	245	244
	0	247	246	250	246	248	250	247	248	251	248	253	248	251	246	242	243

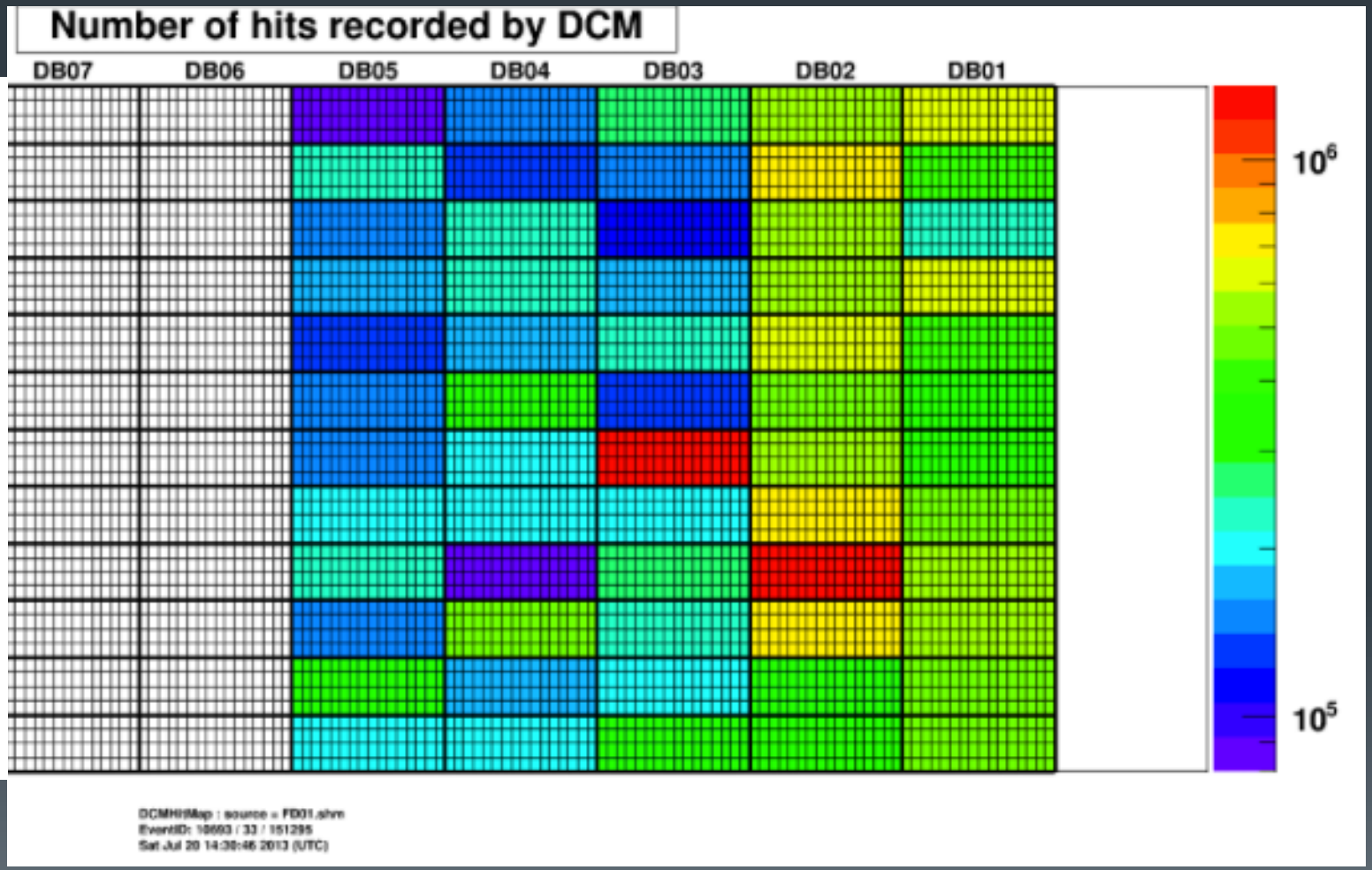
Far Detector Commissioning





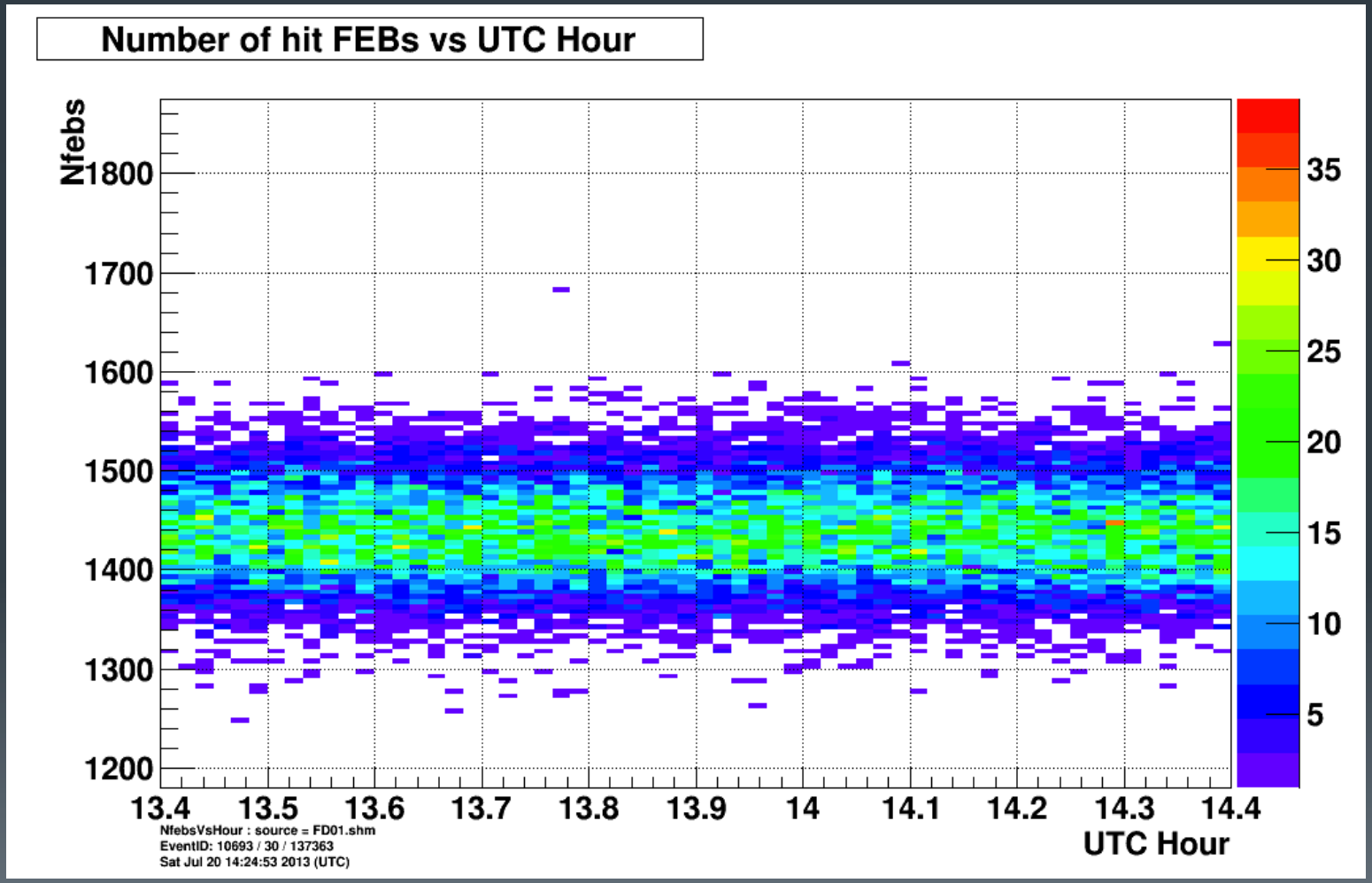
Tools to monitor, e.g., cpu use in Data Concentrator Modules and environmental aspects of electronics

Far Detector Commissioning



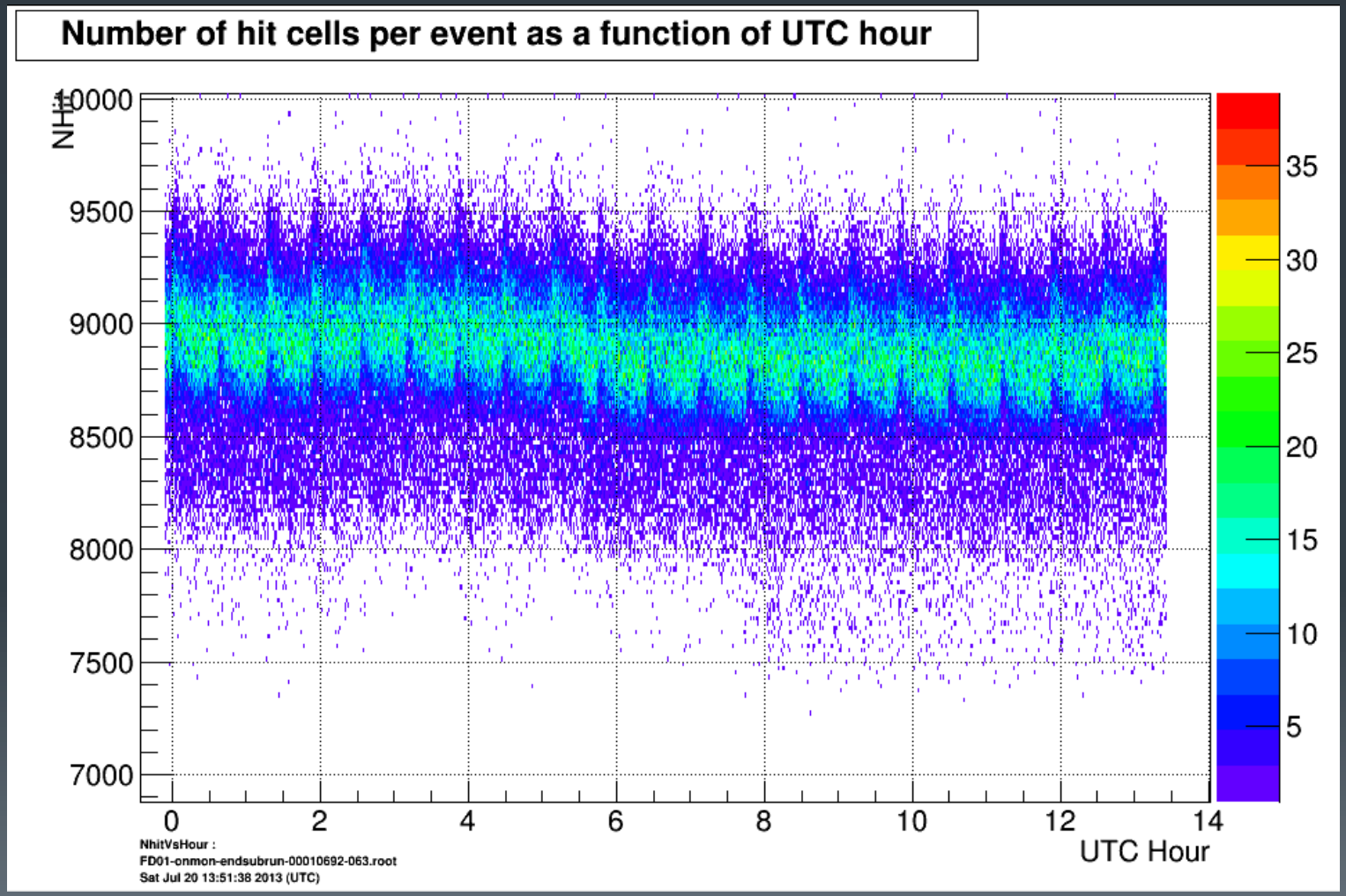
Hits per Data Concentrator Module (DCM) - Diblocks 01, 02, 03(07) fully instrumented, Diblocks 04, 05 Front-end boards only

Far Detector Commissioning



Number of active Front-end boards (FEBs) vs time

Far Detector Commissioning



Total # hits cells vs hour – see cooling water cycle (fast) and building air (slow)

Summary

- Currently taking with 5 kilotons of Far Detector
  - ~2 kilotons with full electronics (warm APDs)
  - 1.09 million gallons of scintillator in the detector (~5.5 kT)
- Expanding with installation and outfitting progress
- Online commissioning tools being used to monitor progress
- Also use offline software as well to complete detector status reports (coming soon)